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or the period May 26–June 13, and one at  $5^{\circ} + 20^{\circ}$  for August 6–10 (corresponding with a radiant of  $4^{\circ} + 20^{\circ}$  observed by himself), while SAWYER gives radiants at  $2^{\circ} + 15^{\circ}$  and  $2^{\circ} + 16^{\circ}$  for August 31–September 11, to which may be added radiants observed by HEIS, SCHMIDT and TUPMAN, giving a still longer duration to the shower. Again, it may be doubted, perhaps, whether the radiant at  $3^{\circ} + 49^{\circ}$  on July 8–11 belongs to the same cluster as the next seven in my list, but SCHIAPARELLI observed meteors from the same radiant on July 31, and TUPMAN from  $5^{\circ} + 49^{\circ}$  on August 20–29. Observations by others may also be in many cases called in to prove that Mr. DENNING's showers are not intermittent, but continuous. There is, indeed, hardly any instance in which the duration of a meteor-shower can be shown to be a short one, or in which there is any appreciable shifting of the radiant as we pass from its earlier to its later manifestations; and I think the average duration of a shower amounts to at least double the period adopted by Mr. GREG.

### SOLAR ECLIPSE, OCTOBER 20, 1892.

TIMES OF BEGINNING, ENDING, POSITION ANGLE, ETC.,  
COMPUTED FOR SEATTLE AND SPOKANE,  
WASH., AND PORTLAND, OR.

By ORRIN E. HARMON, Chehalis, Lewis Co., Wash.

	Pacific Stand- ard Time.		Local Time.		Dura- tion.	Moon's Hourly Motion in Rela- tive Orbit.	Position Angle North towards the East.		Magni- tude of Eclipse Sun's Diam- eter = 1.
	A. M.		A. M.				At Begin'g.	At End'g.	
	Begins.	Ends.	Begins.	Ends.					
<b>SEATTLE.</b> Lat. 47° 35' N... Long. 8h. 9m. 20s. W.....	H. M. S.	H. M. S.	H. M. S.	H. M. S.	H. M. S.		° / ' "	° / ' "	
	8 36 36	10 3 26	8 27 16	9 54 6	1 26 50	1300.6''	7 33 13	68 30 13	.13
<b>SPOKANE.</b> Lat. 47° 40' N... Long. 7h. 49m. 40s. W.....									
	8 33 22	10 19 23	8 43 42	10 29 43	1 46 01	1262.9''	1 52 30	75 40 50	.19
<b>PORTLAND.</b> Lat. 45° 32' N... Long. 8h. 10m. 52s. W.....									
	8 45 11	9 55 10	8 34 19	9 44 18	1 9 59	1289.9''	14 48 46	62 34 52	.08